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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,229	10/08/2003	Suguru Tabara	12844.0045US01	8128

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Minneapolis, MN 55402

EXAMINER
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GOUDREAU, GEORGE A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/682,229

Applicant(s)

TABARA, SUGURU

Examiner

George A. Goudreau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-8 and 12 is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*George A. Goudreau*  
GEORGE GOUDREAU  
PRIMARY EXAMINER  
8-06'

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The finality of the last office action is withdrawn.
2. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection. The examiner will, however, address applicant's previous arguments of record as they relate to the Shintani et. al. reference, which is being currently being used to reject applicant's claims under 103.

Applicant argues the following points regarding the previous rejection of their claims over the Shintani et. al. reference under 103.

-The Shintani et. al. reference which operates both their 1<sup>st</sup>, and 2<sup>nd</sup> plasma etchants at 3 mtorr cannot be used to reject applicant's claims under 103 since the present claims require the 2<sup>nd</sup> plasma etchant to operate at a pressure less than or equal to 2 mtorr. Applicant further argues that it is not prima facie obvious to operate the 2<sup>nd</sup> plasma etchant of Shintani et. al. at a pressure less than or equal to 2 mtorr as stated by the examiner since Shintani et. al. teach that their 2<sup>nd</sup> plasma etchant must be operated at a pressure of precisely 3 mtorr. The examiner must disagree.

One skilled in the art would have expected the 2<sup>nd</sup> plasma etchant of Shintani et. al. to operate properly at a pressure of 2 mtorr if the 2<sup>nd</sup> plasma etchant is capable of being operated at a pressure of 3 mtorr. This is based upon the fact that there is very little difference between operating a plasma etchant at a pressure of 2 mtorr, and operating a plasma etchant at a pressure of 3 mtorr.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5-8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani et. al. (6,651,678).

Shintani et. al. disclose a three step rie etching process for anisotropically etching a polysi gate on top of a pad SiO<sub>2</sub> layer on the surface of a Si wafer which is sequentially conducted in an ECR type plasma etcher. The etching process is comprised of the following steps:

- First, the majority of the polysi gate is anistropically rie etched using a patterned photo resist etch mask, and a plasma which is comprised of HBr-Cl<sub>2</sub>-O<sub>2</sub> with 5 vol. % O<sub>2</sub> content.;

- Second, the polysi gate is anisotropically over etched in a plasma which is comprised of HBr-O<sub>2</sub> with 6 vol. % O<sub>2</sub>.; and

- Third, the polysi gate is anisotropically over etched in a plasma, which is comprised of HBr-O<sub>2</sub> with 17 vol. % O<sub>2</sub>.

This is discussed specifically in columns 4-6; and discussed in general in columns 1-10. This is shown in figures 1-15. Shintani et. al. fail, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific etch process conditions which are claimed by the applicant; and

- the specific thicknesses, which are claimed by the applicant for the gate oxide

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layer

It would have been obvious to one skilled in the art to form the gate oxide layer in the process taught above to the specific thicknesses, which are claimed by the applicant based upon the following. It would have been desirable to form the gate oxide layer to a sufficient thickness to provide adequate insulation between the gate electrode, and the Si wafer without forming the gate oxide layer to an excessive thickness, which would undesirably waste both precious process materials, and processing time.

It would have been prima facie obvious to employ any of a variety of different etch process conditions in the etching process taught above including those which are specifically claimed by the applicant. These are all well-known variables in the plasma etching art, which are known to affect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process conditions which are claimed by the applicant in the etching process taught above based upon *In re Aller* as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. ≡ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

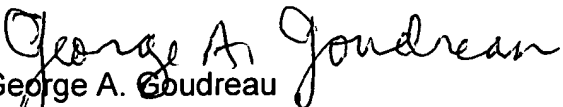
Further, all of the process parameters, which are claimed by the applicant, are results affective variables whose values are known to affect both the rate, and the quality of the plasma etching process.

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5. Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.

  
George A. Goudreau  
Primary Examiner  
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